

(No Model.)

A. M. PHELPS.

TELEPHONE.

No. 344,983.

Patented July 6, 1886.

Fig. 1.

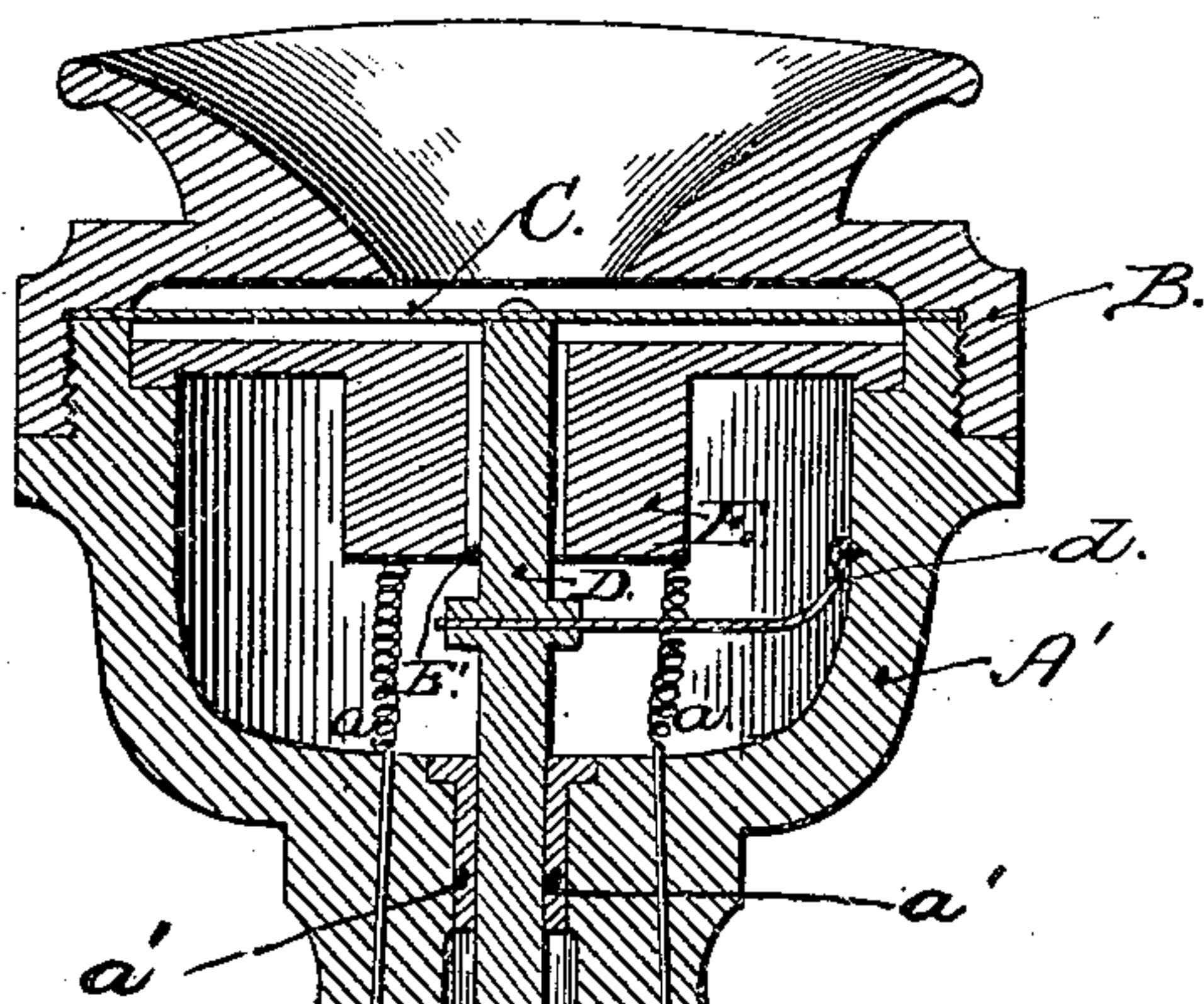


Fig. 3.

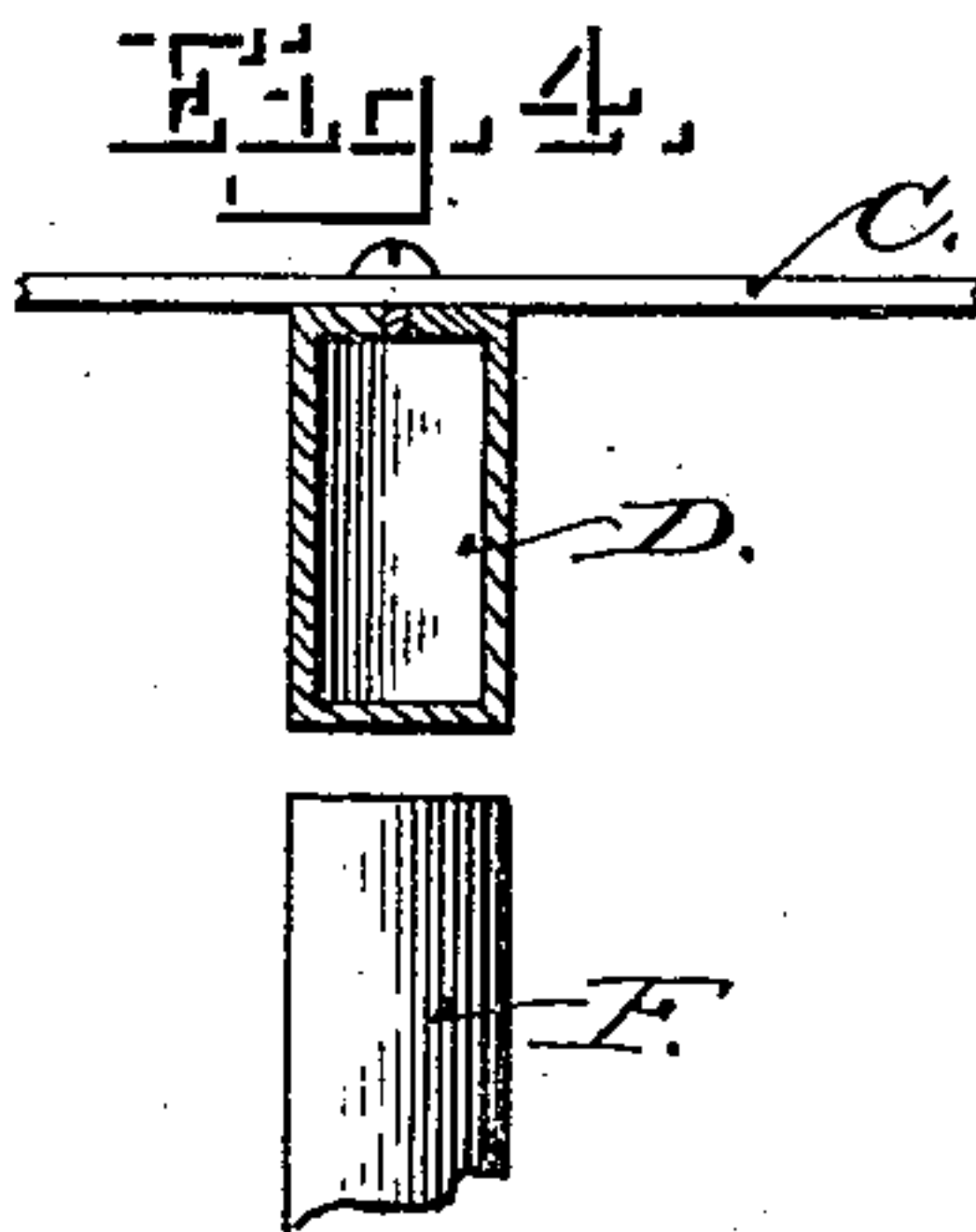
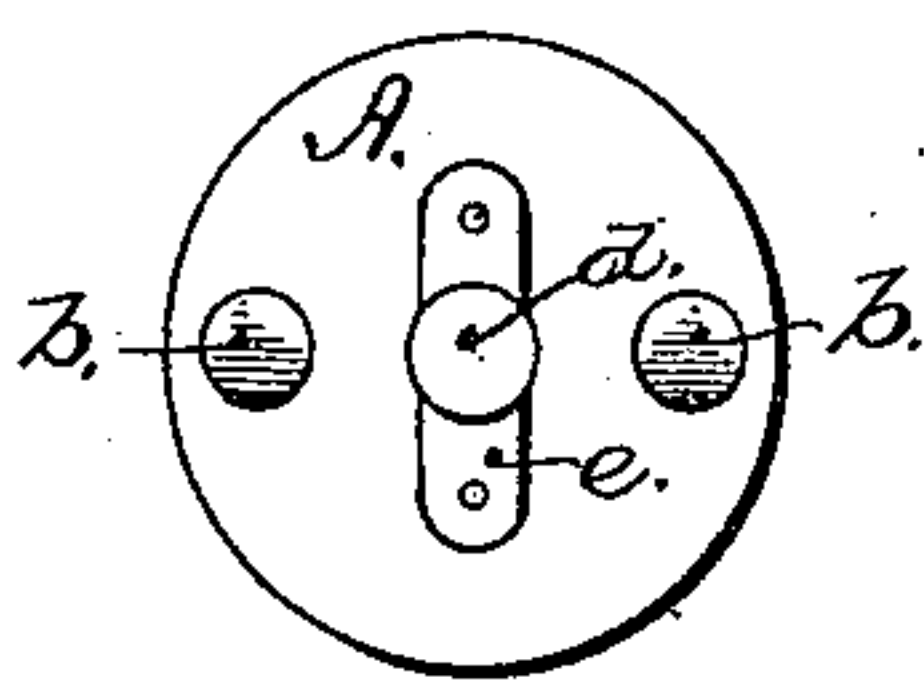
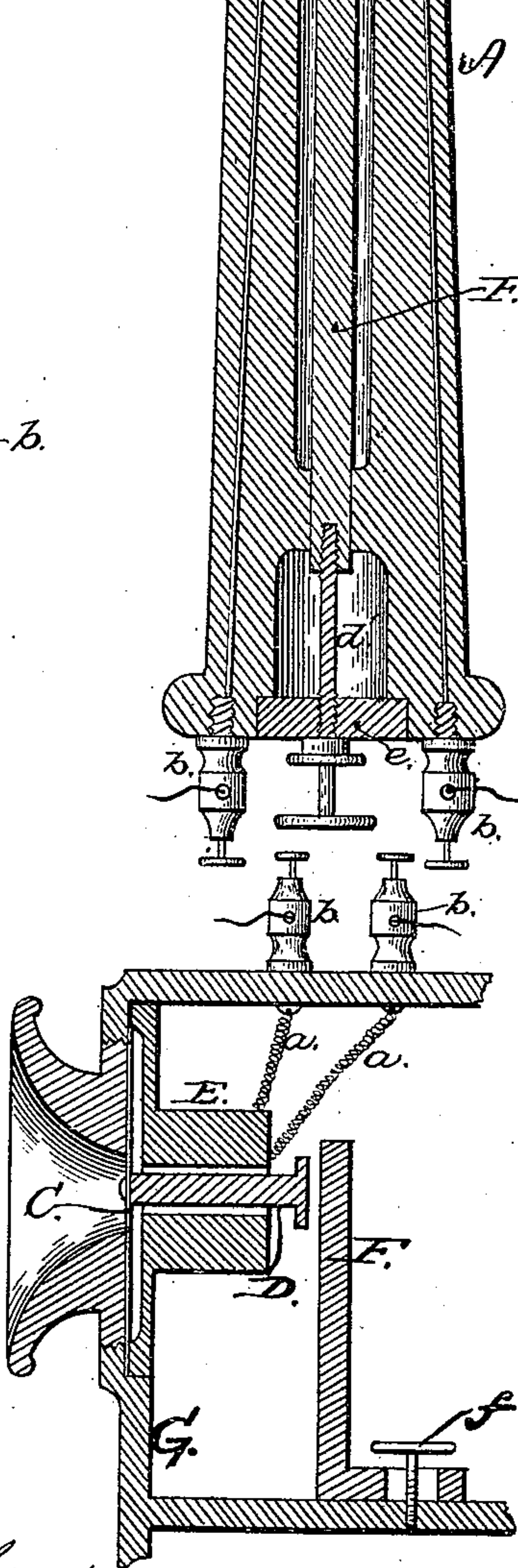


Fig. 2.



Witnesses
Harry S. Rohrer
P. H. Hale

Inventor
Arthur M. Phelps
By his Attorney
Danker & Sweet, Jr.

UNITED STATES PATENT OFFICE.

ARTHUR M. PHELPS, OF SEABROOK, MARYLAND.

TELEPHONE.

SPECIFICATION forming part of Letters Patent No. 344,983, dated July 6, 1886.

Application filed March 19, 1886. Serial No. 195,833. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR M. PHELPS, a citizen of the United States, residing at Seabrook, in the county of Prince George and State of Maryland, have invented certain new and useful Improvements in Telephones; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to certain new and useful improvements in telephones, but more particularly to that class known as "magneto-electrical," and in which sounds are received and transmitted by means of vibratory diaphragms electrically connected, the object of my present improvements being to secure an instrument that will be exceedingly sensitive, that will respond quickly and clearly to the tones of the human voice or musical sounds; and it consists, essentially, of a telephone provided with a diaphragm having a small soft-iron core or bar attached endwise to the center of said diaphragm; and it further consists in holding said bar loosely within a central opening formed in a wire spool, and placing a dividing-sheet between the enlarged ends of the core and permanent magnet.

The peculiar construction and arrangement of the various parts will be more fully pointed out and described in the specification and claims, reference being had to the accompanying drawings, in which—

Figure 1 is a longitudinal sectional view of my invention, showing the parts in place with wire attachment and ear-piece at end. Fig. 2 is a transverse sectional view of same, showing parts in place with ear or mouth piece on side. Fig. 3 is an end view of the handle, and Fig. 4 is a detail sectional view of core and magnet.

Similar letters refer to similar parts throughout the drawings.

Referring to the drawings, A represents a hand-receiving case formed of any suitable material, and having a central longitudinal opening, one end of said case being formed with a circular enlargement, cup-shaped and

hollow, (designated as A'), said enlargement being screw-threaded on its outer edge to receive a screw-threaded cap or ear piece, B, having a flaring opening. A diaphragm, C, having a small soft-iron bar or core, D, centrally attached by its end thereto, is placed within the cup-shaped piece B above a coiled or wound wire spool, E, said spool being rigidly secured within said cup A', and provided with a central opening, E', through which the soft-iron bar or core D is arranged to move freely endwise, so that the slightest vibration of diaphragm C affects and moves said bar. The ends of the wire passing around spool E are connected by wires *a* to binding-posts *b*.

The inner end of core D is flanged outward, and abuts closely to the flanged end of the permanent magnet F, the object of this construction being to provide a larger magnetizing-surface between the ends of core D and magnet F. Magnet F extends lengthwise from the end of core D through the handle of case A, and is adjustably secured by means of a set-screw, *d*, passing through the end of handle A, as shown in Fig. 1. A friction guide or washer, *d'*, formed of rubber or other suitable material, is placed around magnet F, below the bottom of cup A'. An anti sticking and jarring disk or sheet, *d''*, formed of metal or other suitable material, is placed between the flanged ends of core D and permanent magnet F, said disk or sheet being secured to the inner face of cup A', the purpose of this sheet being to prevent jarring of the magnet and core when the diaphragm C is vibrated, also to prevent sticking of the opposite faces of the flanged parts of said magnet and core.

Between the thumb-piece of screw-bolt *d'* and the end of case A a screw-threaded slip-washer, *e*, is loosely secured, by means of which the bolt *d'* is held tightly in place at any desired point, whereby the magnet F is securely held.

The arrangement of the different parts as a transmitter is shown in Fig. 2, in which the flaring mouth-piece is shown attached to the side of case G, the diaphragm and core and magnet made to work transversely in said case, the inner end of said case G being arranged with a set-screw, *f*, by means of which the magnet is adjustable transversely. The soft-

iron core D may be hollow, if deemed desirable or advantageous.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A telephone transmitter and receiver provided with a central magnet in line with a small soft core within a wire spool electrically connected, a diaphragm centrally joined to one end of said core and the opposite end in close proximity to one end of a permanent magnet, with an intervening sheet or disk, the whole surrounded with a suitable case, substantially as set forth.

2. A telephone constructed with a case, A, provided with a cup-shaped end, A', on which

flaring cap B is secured, under which is secured a vibrating diaphragm, C, to the center of which a soft core, D, is endwise secured, a wire spool centrally surrounding said core, a permanent magnet, F, held in line with core D, a dividing-sheet, *d*, the non-conducting washer *a'*, the set-screw *d'*, and the washer *e*, in combination with the wires *a* and the binding-posts *b*, substantially as shown.

In testimony whereof I affix my signature in presence of two witnesses.

ARTHUR M. PHELPS.

Witnesses:

B. F. DISNEY,
PARKER H. SWEET, Jr.